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Abstract

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Advanced Extra-vehicular Activity Pressure Garment Requirements Development

The NASA Johnson Space Center advanced pressure garment technology development team is addressing requirements development for exploration missions. Lessons learned from the Z-2 high fidelity prototype development have reiterated that clear low-level requirements and verification methods reduce risk to the government, improve efficiency in pressure garment design efforts, and enable the government to be a smart buyer. The expectation is to provide requirements at the specification level that are validated so that their impact on pressure garment design is understood. Additionally, the team will provide defined verification protocols for the requirements. However, in reviewing exploration space suit high level requirements there are several gaps in the team's ability to define and verify related lower level requirements. This paper addresses the efforts in requirement areas such as mobility/fit/comfort and environmental protection (dust, radiation, plasma, secondary impacts) to determine the by what method the requirements can be defined and use of those methods for verification. Gaps exist at various stages. In some cases component level work is underway, but no system level effort has begun, in other cases no effort has been initiated to close the gap. Status of on-going efforts and potential approaches to open gaps are discussed.